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# COMPLETE SPECIFICATION

(ORIGINAL)

## FOR OFFICE USE

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Complete Specification for the invention entitled: "SURFACE TESTING DEVICE"

18 JUN 1974

The following statement is a full description of this invention, including the best method of performing it known to me:—

05 13-7-78

\*Note: The description is to be typed in double spacing, pica type face, in an area not exceeding 9 $\frac{1}{2}$ " in depth and 6 $\frac{1}{2}$ " in width, on tough white paper of good quality and it is to be inserted inside this form.

This invention relates to a device for testing characteristics of a surface and relates particularly to device suitable for use in evaluating a surface such as a bowling green or the like.

5       A surface such as a bowling green changes according to climatic conditions, growth of the lawn, treatment given by means of rollers and the like so that the resistance to movement of a ball, bowl or the like and therefore the rolling characteristics will vary. Further, surfaces of  
10      different greens will vary greatly.

Heretofore the only means by which a bowler could evaluate a green surface and/or compare different surface was by using the surface or manually rolling a ball or bowl. Such evaluation or comparison is purely subjective.

15      It is an object of the present invention to provide a device enabling comparisons of different surfaces to be made in respect of a ball or bowl rolling thereon.

It is a further object of the invention to provide means facilitating evaluation of a bowling green surface.  
20      Such an evaluation may involve the degree of resistance to rolling, bias effect, softness or hardness of the surface, the lie of the green and the like.

A further object of the invention is to provide a device for testing or evaluating a surface which is very simple to use and which is relatively economical to manufacture.

According to the invention there is provided a test device for measuring or evaluating the rolling speed of a surface such as a bowling green comprising an elongated track means having at least one end portion thereof curve-

to lie substantially tangentially to a horizontal surface whilst the other end is disposed a predetermined distance above the surface, stand means connected to the track means support it in position, and releasable stop means on  
5 the track adjacent said other end, said stop means adapted to support a ball on said track and to release the ball to roll down the track onto said surface.

Preferably, the end portion of the guide which rests on the surface is curved so that the surface will be  
10 substantially tangential to the lower end. This avoids any sudden change of direction of the ball as it rolls down the guide and onto the surface.

Alternatively, the whole guide may be formed in the shape of a parabola or other curve to provide a predetermined acceleration to the ball so that its velocity at the point of contact with the surface is a maximum for a given length and height of guide.

It is also preferred that the stand means is pivotally connected to the guide to permit the device to be folded  
20 for compactness.

The elongated ball guide may comprise a channel of substantially arcuate cross-sectional configuration, a U shaped channel, a tube or any other section which will accurately guide a ball rolling therealong with a minimum  
25 of friction.

The stop means preferably comprises a pivoted plate or the like which is arranged to project into the path of a ball on the upper end of the guide and hold it in position. The plate is then released so that it moves out of the path of  
30 the ball to allow the ball to roll down the guide track..

In order that the invention will be more readily understood and put into practical form one embodiment thereof will now be described with reference to the accompanying drawings, wherein;

5           Figure 1 is a side elevational view of a surface evaluating device according to the invention,

              Figure 2 is a rear elevational view of the device of Figure 1,

10          Figure 3 is a sectional view taken along the lines 33 of Figure 1, and

              Figure 4 is a detailed view of the upper end of the device of Figure 1.

Referring to the drawings, there is provided a surface evaluating device which comprises an elongated track member 11 or shallow U shape at the cross section. The side edge portions 12 of the track member 11 are each formed with a relatively sharp upper inner edge 14. A ball 15 of a predetermined diameter and mass is adapted to roll down the guide track member 11 on the edges 14. The guide member 15 is preferably formed of metal, such as aluminium or aluminium alloy, or of a rigid synthetic plastic material.

The guide track member 11 is substantially straight along most of its length with one end 16 thereof being curved in a plain perpendicular to a plain containing the relatively sharp edged 14. The curvature of the curved end of the track member is such that when the free end of the curved end is substantially tangential to a horizontal plain the substantially straight section of the track member 11 is disposed at an angle of between 25 and 45 degrees to that horizontal plain.

The side edge portion 12 of the track decrease in height along the curved end of the track member 11 so that a ball 15 rolling down the track is guided smoothly onto the horizontal surface on which the curved end 16 of the track is resting.

5 A stand 17 is pivotally connected to a bracket 18 fixed adjacent the free end of the straight section of the track member. The stand 17 is of substantially triangular shape with a ground engaging leg 19 of a length to provide stability to the device. A folding stay 21 is connected between the guide and the stand 17 to positively locate the angular position of the stand relative to the guide. 10 A clip 22 fixed to the lower end of the track member 11 engages and holds the stand 17 in the folded position. 15 The stay 21 is provided with an overcenter locking action to prevent inadvertent folding of the stand relative to the track member 11 during operation of the device.

20 A slot 23 is formed in the track member 11 adjacent the upper end thereof. A pivot pin 27 extends between the side edge portions 12 of the track above the slot 23 and a plate 26 having a downwardly extending leg 24 which passes through the slot 23 is attached to the pivot pin 27 for pivotal movement thereon. The plate 26 is movable from a position substantially co-planar with the bottom surface of the track member 11 to a position substantially at right angles to the track member 11. In this latter position, the plate 26 obstructs the track member 11 to prevent the ball 15 rolling down the track. The plate 26 is held in the substantially vertical position by a chain 28 engaged with 25 the leg 24. 30

In operation, the surface evaluating device is used test the pose or rolling characteristics of a surface such as a bowling green. The track member 11 is positioned on the surface with the curved end 16 substantially tangential to the surface. The stand 17 is opened and located in position by the stay 21. The ball 15 which is a standard dimension and mass is positioned on the upper end of the track member 11 and held in position by means of the plate 26. This requires continuous tension being applied to the chain 28 to maintain the plate 26 in position preventing movement of the ball down the track. On release of the chain 28 the ball commences to roll down the track and onto the surface to be evaluated. The distance travelled by the ball on the surface provides indication of the rolling characteristics of the surface and thereby enables comparisons to be made between various surfaces.

In a modification of the invention, the stand may be adjustable so that on any surface a ball may be caused to travel a predetermined distance. With such height adjustment, the bias effect of the surface may then be tested using a standard biased ball, or bowl to give an indication as to how much bias the surface will allow over a given distance.

The device of the particular embodiment illustrated is preferably of a length of substantially 2 metres and the upper end of the track member 11 is positioned 1.2 metres from the ground. The standard ball or measuring jack 15 is preferably of a diameter of 85 millimetres and has a mass of 567 grams.

The claims defining the invention are as follows:

1. A testing device for measuring or evaluating the rolling speed of a surface such as a bowling green comprising an elongated track means having at least one end portion thereof curved to lie substantially tangentially to a horizontal surface whilst the other end is disposed a predetermined distance above the surface, stand means connected to the track means to support it in position, and releasable stop means on the track adjacent said other end, said stop means adapted to support a ball on said track and to release the ball to roll down the track onto said surface.
2. A testing device as claimed in claim 1 wherein the said one end portion is curved so that the ball is travelling substantially horizontally when it engages the substantially horizontal surface.
3. A testing device as claimed in claim 1 or claim 2 wherein said releasable stop means comprises a plate pivotally mounted adjacent the other end of said track and movable between a position substantially parallel to said track and a second position substantially perpendicular to said track.
4. A testing device as claimed in any one of the preceding claims wherein said stand means comprises a stand pivotally mounted to said track means and stay means pivotally connected between said track means and said stand means.
5. A testing device as claimed in any one of claims 1 to 4 wherein said track means is substantially channel shaped in cross-section and the side sections thereof have

*AMENDED*

relatively sharp inner upper edges along which said ball rolls.

6. A testing device as claimed in any one of the preceding claims wherein said stop means is provided with manually operable means to raise the stop means into the path of said ball, said manually operable means being releasable to allow said ball to roll down said track.

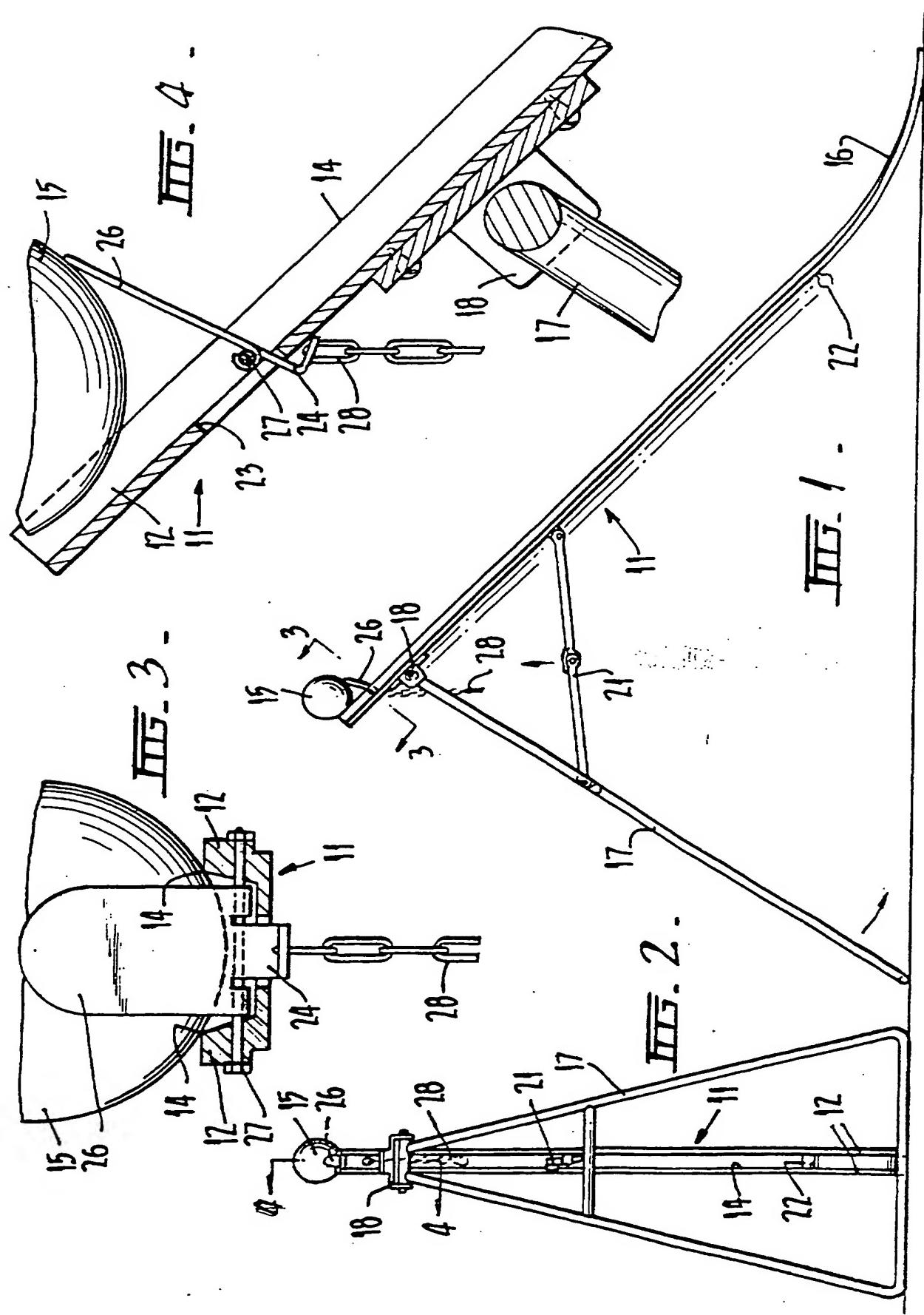
7. A testing device substantially as hereinbefore described with reference to the accompanying drawing.

DATED this 25th day of July, 1974.

JOHN GIBSON WILL

John Gibson Will

John Gibson Will



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